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Passed March 5th 1827
W. L. H.

An

Inaugural Dissertation

on

Cynanche Trachealis

by

Albert Sargeant

of

New Jersey

Nov.r 1826.

Monday at 10 o'clock

A variety of names has been given to this disease, as Suffocatio stridula, Angina polyposa, asthma infantum, Cynanche stridula, Angina epidemica, morbus strangulatorius, and it is commonly called Croup, hives, the heaving of the lights, or lungs, the choak, or stuffing.

The best nosological title, and the one most indicative of the disease, is Trachitis.

It is not necessary that I should inquire whether this disease was known by the ancients, or, is one of modern origin. It is well known to be one, of but too frequent occurrence, in this as well as, in other Countries, and, one of but too frequent danger.

This disease seems chiefly to be confined to child-hood, and is most frequent in infancy, or before the fifth, and sixth year. It is affirmed by Cullen, that it seldom attacks infants, before they are weaned, and that there is no instance

of its having attached a child above the 12th year. This as a general rule may be correct, but there are several exceptions. Doct. Dewees says, "We have seen it in its most formidable shape in children at the breast, and we have witnessed deaths from it in the adult. Professor Chapman, also, in his lectures, mentions, that he has known it to attack them within the months, and also after the age of puberty. He cites the cases of two ladies of this city, who have had repeated attacks of it, and that the same is transmitted to their children. Cheyne in his essays also says, "that Croup chiefly prevails in children from a short period after <u>birth</u>, until puberty, attaching itself to particular families," and further says "I have heard of no example of this disease after the fifteenth year," which he supposes is owing to the change the constitution undergoes at this period of life, and, perhaps, in a more

particular manner, "the change which the up
per part of the wind-pipe undergoes." How far
this latter assertion is true, I will leave for others
to judge, but it is both ingenious and probable.
This disease generally affects those of a "florid
complexion, and enjoying high healths, and es
pecially those inclined to be fat before two years."*
It is found to be more prevalent in some places
than in others, particularly near the sea coast,
when the air is loaded with moisture, and in
many places, so as to preclude the raising
of Children. It likewise arises from the influence
of a cold, moist, austere atmosphere, hence it
prevails most generally in the spring and au
tumn; and almost any sudden transition,
which shall too suddenly check perspiration,
will produce it. This is not a contagious disease
but it sometimes prevails epidemically.
Croup has arisen from worms, and sordes in

* See Dewees on Children.

the intestines. Proffs.r Chapman, in his lectures, mentions the case of a child being immediately relieved by the discharge of worms. It also arises from oppression of the stomach from indigestible food.

This disease has been divided into Spasmodic and Inflammatory. For the ideas which I have on this subject, I am much indebted to the distinguished Professor Dr. Chapman; he, considering, that, in all cases, when it suddenly attacks, it must partake of the nature of spasm; for time says he, is required to induce inflammation, which consist in an altered action of the vessels of a part, effected comparatively by a slow process; and no cause promotes it quicker than spasmodic constriction; and indeed the early symptoms correspond with this pathology, and dissections fully confirm it, shewing when death suddenly takes place, no existing marks

of inflammation. But when the disease slowly approaches, or is the effect of inflammation of other parts extending to the trachea, as sometimes happens, in measles, scarlet fever, and most of the anginose affections, it is of a contrary character, and post mortem examinations have revealed such appearances, as might have been anticipated.

Dr. Dewees does not believe in the presence of spasm, in either the forming, or formed stages of this complaint. He thinks it may and probably does take place in the last or "congestive stage", as he denominates it. The distinction however leads to no practical difference, whether one or the other, depletory measures must be used

It attacks in various ways. It commonly comes on at night, about two, or three O'clock in the morning, and sometimes without any premonition

The child wakes up with a hoarse, dry, stridulous cough, which is peculiar to the disease,

and is compared to the barking of a dog, or the crowing of a cock. Attendant with this, there is a difficulty of breathing, which is very distressing to the patient, threatening in some instances suf-focation. The face is flushed, and the pulse quick and irritated, great restlessness and anxie-ty. The child tosses about the bed, and will not remain in one position, nor can its complain-ts, in any way be appeased. It whines, and cries and fretts and seems to be very uneasy, without suffering any positive pain. Such cases, very likely depend on spasms, and terminate fatally, if relief is not afforded, and if relieved will probably return the next night.

But oftentimes the disease approaches more gradually, "by a hoarseness which is perceived up-on coughing, and may continue without increase for even several days, or until the sudden applica-tion of some exciting cause, as a change in the

temperature of the air; exposure to cold and damp, or an improper check of perspiration, calling forth some of its more formidable symptoms, as difficul-ty of breathing; an increase of cough without ex-pectoration; suffusion of countenance, running from nose and eyes; a hard and more shrill cough than is usual, and various degrees of fever which with the cough is always exacerbated at night, and especially after the child has slept.

When the two species are completely formed, there is no material difference between them and the progress is nearly similar. This last form is longer running its course, than the one above mentioned, as it is less obedient to the powers of medicine. This Dr. Dewees, thinks, "is doubtless ow-ing to its first symptoms, hoarseness, being neg-lected; to obviate which, he emphatically ad-vises parents to be on their guard, whenever this symptom may take place, he having found

it, from long experience, to be one, of a most danger-ous, and threatening character, and when it is im-mediately opposed by active remedies, this formid-able complaint has been stopp'd, in limine, in ve-ry many instances. "It is true" he says "a hoarse-ness passes off, sometimes, without much mischief, but this is not the hoarseness of croup, for this," he believes," never takes its leave spontaneously;" He, therefore lays down the following rules, by which we may distinguish them, viz. "that there is a cer-tain clearness and distinctness, in the croupy sou-nd, that does not attend the other; the one (the croupy) seeming as if it issued from a metallic instrument; and the other from a lips vibrating material. The ear, however, by long habit, may learn to distinguish them; and when once in-structed in this discrimination, never looses its tact;" and, "that the coarse scent hoarseness is al-most always accompanied by a little soreness

of throat; while that of croup," he believes, "never is again," the first is perceived in common speak=ing; whereas that of croup is only discernable, in the commencement, by coughing;" and lastly, "Some little pain and soreness are observed about the pos=terior fauces, after coughing, in the one, which never happens in the other." Still he advises, "that whenever hoarseness takes place, not to trust too much to the discriminating powers of the ear, for its nature; but instantly proceed upon the supposition, that it may be of a dangerous kind. He also observes in a note," that it may be remar=ked, as a general rule, that when the voice be=comes suddenly affected by hoarseness, which discovers itself in speaking, and without being so in coughing, it is not the hoarseness of croup. This kind of hoarseness, however, is more com=mon to adults, than to children.

Diagnosis is easy. It may be distinguished

from acute asthma, by the peculiar, ringing, coughs. In Croup the pulse is strong, and urine high coloured, and the voice shrill and small, whereas in acute asthma, the pulse although equally quick, is less full, the urine is limpid, the voice croaking and deep. It may be distinguished from C. Laryngea, by the redness of fauces; uneasy sensation in the larynx; exemption from the cough and peculiar intonation of Croup, by the period of life at which it occurs — the first being incident to child-hood — the latter to advanced age — painful deglutition — swelling of the fauces; and perpetually increasing difficulty of breathing.

Prognosis. By pursuing a proper and vigorous practice, we may arrest it in its early stages; but if it continues, and the lungs become affected, it is dangerous. The most favourable symptoms are, the medicines operating well, partic=

ulate the Emeties; the breathing becoming more easy; loose cough, remission of fever; and the pulse becoming natural; but if these should not happen, we have a weak pulse; pale counten-ance; heaving of the shoulders; and the heart thumping hard, and thrown forward against the ribs. These two last symptoms, Prof. Chapmans, tell us are very dangerous, and the child seldom recovers from them.

Dissections are various, according to the stage of the complaint; the violence of the attack; and the treatment pursued. The trachea is general-ly inflamed, sometimes extending down to the ex-tremities of the bronchia, into the substance of the lungs. Sometimes we find the lungs gorged with blood, and so solid, as to resemble the substance of the Liver, called Hepatization of the Lungs. Sometimes a membrane is found lining the tra-chea, extending from below the Larynx, to the bron

-chial ramifications, and Dr. Dewees says, that he has seen it within them. The existence of this membrane has been denied by some, declar-ing it to be nothing but inspissated mucus. Professor Chapman says, that he has never met with it, having observed nothing more than slight marks of inflammation, with more or less of mucus. That such a membrane does exist, I have not the least doubt, as we have the testimony of some of the most respectable practitioners, as Dewees, Hof-ack, Cheyne, and Francis.* Nothing is more com-mon, than to see lymph poured out from vessels in a certain state of action, and forming adhesions, or artificial membranes, an example of the latter of which, we have in this disease.

Treatment. From what has been said, it will appear evident, that nothing but the most active remedies can arrest the progress of this formidable disease. Therefore the instant we observe the croup

* and Cullen.

-py sound, we should inflame the external throat by the application of the spts. Turpentine, hartshorn or mustard and vinegar; and in aid of these external applications, we may direct in doses suitable to the age of the patient. "the compound syrup of squills", or Dr. Coxe's Hive syrup, as an Emetic, and afterwards in small doses, as an expectorant, or as Professor Chapman prefers the Tart. Antimony given at short intervals, and if this should not succeed add Ipecac. and Calomel which, he says seldom fails. I have seen several cases in which the hive syrup, was administered with the most decided advantage. While the Emetic is operating P. Chapman advises the patient to be put into a warm bath for 10 or 15 minutes.
"It rarely fails to promote the operation of the Emetic, and will sometimes alone cure the disease."

The Emetic however not operating, or if after its operation, the patient is not relieved, bleed copious

=ly and repeat, together with the warm bath.
The attack must be very obstinate, if it do not now yield. Of the efficacy of bleeding in this commence=ment of this disease I quote the following from Cheyne. "When bleeding is used on the commence=ment of the violent symptoms, the relief is often im=mediate; and I have scarcely believed, that I saw the same child, breathing softly, (who, ten minutes before, lay gasping and convulsed."
"The repetition of bleeding, however must be governed by circumstances; for bleed we must, in some ca=ses, again and again, if the system reacts with force, and the pulse be found of difficult reduc=tion."* Never the less it will occasionally contin=ue, with little or no abatement; and under these circumstances, we should resort to topical deple=tion, by leeches or by Cups. The cups should be applied to the sides or back of the neck.
The leeches are preferred by Dr. Chapman, though

* Vide. Dewees on Croup.

highly objected to by Doct. Dewees, "he having never, in a single instance, seen them do good, but in a number of cases, seen them do harm", becaus 1.st it employs considerable time; during which, the patient is obliged to maintain an irksome position and this may be extremely unfavourable to his breathing. 2.nd It often becomes important, that the quantity of blood to be drawn, should be exactly determined: this cannot be done in leeching - especially, as the after bleeding is sometimes very considerable, in spite of any attempt to arrest it, to the manifest injury of the patient. 3.rd Their coldness; and the sudden exposure of the throat, after having been warmly covered, is oftentimes so mischievous, that the bad symptoms can be seen to increase during the operation; and are almost sure to follow, immediately after.

After having applied the cups or leeches, a sinapism or blister should be put over the throat, if it has

not been applied before. When remedies failing, or the symptoms, becoming so alarmingly violent, as to demand immediate relief, we should bleed *ad deliquium animi*, and this once induced, seldom fails, to awaken the susceptibility of the stomach to the action of emetics, and effecting all that can be expected from the most free and active vomiting.

The moment syncope takes place, the hoarseness cough, impeded respiration and fever disappear

This extensive mode of bleeding, we are told, was first suggested by Doct. Dick of Alexandria.

The small and repeated bleedings, which some advise, in this case would prove of no avail, and to use the words of Prof. Chapman, "would be a pernicious abuse of an important remedy".

He lays it down as a general rule, to which there are a few exceptions, that in acute diseases where venæsection is at all demanded, it should be in the commencement so copious, as to pro=

duce decisive effects. He also says, that, "detractions of blood in a small or large quantity, operate differently. The former abates action only, while the latter alters it, or, so far reduces it, as to enable the natural energies of the system to subvert, or overcome it, and to establish health." Of this principle, we have illustrations in pleurisy, in fevers and many other affections, where a single profuse bleeding, timely recurred to, arrests the progress of the case". Even if debility should be apprehended, we should bleed, if the loss is necessary to a cure.

The disease thus being broken, which is known by the abatement of the former symptoms, and still more so by the restoration of the natural susceptibility of the system to the action of medicines, we should administer Calomel, not in small and repeated doses, but in the largest possible doses, that it may speedily and most actively purge.

But should cough, hoarseness, with tightness of chest and difficulty of respiration remain, we may use the "compound syrup of squills," or what is very good the Polygala Seneka. This last is spoken in very high terms of, by P. Chapman, in extinguishing the remnants of the disease. It was first introduc=ced in the treatment of this disease by Doct. Archer of Maryland, who gave it unlimited prai=se. He used it in every form, and stage of the disease, sometimes as an emetic, and under other circumstances as an expectorant. It is now chief=ly confined to the secondary or ultimate stages of this complaint, and chiefly as an Expectorant. It is exceedingly useful to overcome hoarseness, and other sequelæ of this disease

The foregoing treatment relates to the forming and earlier stages of Croup, while the inflammation is confined pretty much to the upper portion of the trachea, and consist either in a spasmodic

constriction of the Glottis, or inflammation of the mem=branous lining of the larynx. But continuing ten or fifteen hours, it extends to the bronchiæ, into the substance of the Lungs, producing collections of mucus or phlegm, or an engorged state of the pul=monary organs, with blood. The symptoms are ve=ry different. All the manifestations of an inter=rupted, and defective circulation exist. The lungs imperfectly execute their office. The countenance is mottled, the cheeks hectic, the eyes prominent and inflamed. The pupils are widely dilated, countenance expressive, wild, haggard, and ghast=ly; respiration laborious; full and distended pulse; or the child sinking under the disease has its breathing more tranquil, with a weak or irregular circulation. The symptoms in these states of the lungs are so analagous, that it is not easy to establish a diagnosis; tho' it is ne=cessary as the treatment will vary. It may be

distinguished from that state of the lungs in Bron=chitis, especially of that form of it, which resem=bles Catarrhus suffocatious, by the latter hav=ing had its origin in catarrh; also a greater or less discharge from the lungs, or at least evi=dence of heavy accumulations of matter, with an inability to throw it up; the pulse is languid and the surface is cold and clammy.

But when occasioned by sanguineous con=gestion, however oppressive the dyspnea may be, there is little or no cough, or pituitous dis=charge, and what is more distinctive, an absence of the wheezing, so generally a symp=tom of Bronchitis. The respiration is, however, singularly hurried, panting and laborious. The pulse too is full, though irregular, and distended, tho' very readily compressible.

Cases of this sort, occur in florid and plethoric children, or the weak and valetudinary.

The indication, therefore, in the treatment of this case, is, to relieve the lungs of oppression, and to establish a free and equable circulation. To effect this purpose, Prof. Chapman directs copious vomiting, by an active and stimulating emetic, while the child is in a warm bath.

The Sulp. Zinci. is recommended by some, tho' I am disposed to think, that when active vomiting is demanded, nothing will answer the purpose so well as Tart. Emet. with Calomel & Ipecacuanha. The Juice of Garlic, or onion in doses of a teaspoonful, is very good.

We are to be cautious, how we draw blood, in this case, as we may by a single large bleeding, sink the patient. Therefore we should detract small and repeated quantities, endeavouring to "coax out the half stagnant blood, watching the effect on the system. When the lancet is forbidden, cups and leeches may be used, in its stead, which should be

applied to the back. The bleeding should be follow=
=ed by a blister applied on the breast, and if the
case is very urgent, as to admit of no delay, some
means of more prompt vesication, may be resorted
to, as cloths wrung out in hot water, or what is per
=haps still better, pledgets of lint dipped in a de=
coction of cantharides, made with the spirits of Tur=
=pentine. The subsequent treatment consists prin
=cipally of the use of expectorants; the best of which
is the "compound syrup of squills," also antimonial
wine; the oxymel, vinegar of squills, decoctions of
Seneca root, either alone, or combined with carbonate
of amonia. Much may be expected from the liber
=al use of Calomel. It is a very active expectorant.
Dr. Hamilton, we are told gave one hundred grains
in twenty four hours, to a child.

The disease not yielding to the foregoing treatment
the vessels of the inflamed surface, relieve themselves
by an effusion of coagulable lymph, forming a deci

=diseases membrane. This stage is one of great dan=ger to the patient, since we cannot with certain=ty, get rid of the membrane; or if we could, we cannot change, but rarely, the disposition of the parts, to form new ones.

The indications, therefore, are. 1st To remove this membrane, and 2ndly after removed, to prevent the formation of more. 1st The membrane has been re moved by emetics. Dr Dewees relates the case of a child of his, in whom the membrane was removed by this means; but the disposition to form new ones still remaining, it was reproduced, and proved fatal. Several cases are related by Dr Ho=sack,* which came under the care of Dr Francis in which emetics proved very effectual in removing it. Since the obstruction is purely mechanical, that remedy, which gives the most sudden shock to the respiratory organs, would bid fair=est of success, hence the utility of pretty powerful

* See appendix to Thomas' Practice.

emetics. This all practitioners agree to, but some variety of opinion exists, as to the proper substance for this purpose. In the cases related, by Dr. Hosack the vitriolic emetics as Sulphate of Zinc, and Sulphate of Copper, were used. Dr. Dewees relies on the Polygala Seneca, with more confidence than any other of the emetics substances. He gives it in the following form. "Take half an ounce of powdered seneca, pour on it half a pint of boiling water, and let it simmer until nearly half reduced; strain it carefully, and give a tea-spoonful every fifteen or twenty minutes, until it pukes. This quantity will answer for a child from one to three years old — for one of greater age, two tea-spoons-fuls at a time may be given." This medicine he says is apt to run off by the bowels, when exhibited thus strong; therefore a quantity of laudanum should be given from time to time, say two or three drops every two or three hours. He thinks, that he has seen evident relief in a

case from the ½pts. of Turpentine. Twenty drops were given every hour, but the patient died.

We are told that a late German writer strongly recommends active sternutatories, to produce sneezing. Lastly, Tracheotomy has been proposed, and performed, generally without success, and the reason is very obvious, for by the operation we only remove the present obstructing cause, and do not remove the disposition of the parts to form more. It has been said that the failure was owing to our performing the operation too late; and therefore it has been advised to be performed earlier in the disease. This practice might prove successful, but few practitioners, I think would be willing perform it.